



JUNE 1989

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The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at the Hewlett-Packard facility, at the intersection of Lexington and Union, at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Keith Goobie NYØT, 5335 Coneflower Ln., Colorado Springs, CO 80917 637-1525

A NEWSLETTER EDITORS WORST FEAR

Or How You Can Become a Published Author!

For the second time now I am amazed at how much it takes to fill up O-Beat. It needs about 16 columns of "stuff" each month, and at 2700 bytes per column, that's alot of stuff!

Where does it all come from? For some time now, the great majority of it has come from you, the O-Beat readership. That gives it a style that is unique and particularly suited to the needs of the PPRAA.

There are times when contributions to the newsletter lag just a little. At such times the great fear of the editor is that the pages will go unfilled, with gaping white spaces as irrefutable evidence of the editor's failing.

Of course in modern times this is a most unlikely event. These days an editor can dip into the national bit-stream and download an article or two to fill in the spaces. (In fact, I have a 22-part article on packet radio that could serve as several editions of O-Beat by itself. If you see them appear, you'll know why.) Each time an editor does this, a bit of the unique character of the publication is lost.

Then again, with modern word processors and printers, it's quite simple to change the printing. Ten point type can become 12, and at 14 points the newsletter fills rapidly. This merely hides the evidence though, because it cannot make up for missing content.

Transitioning from one editor to a new one is one of those difficult times when the contributions lag. Sure, the regular contributors, without whom this publication would cease to exist, still contribute. Yet another 50% or so is still needed to fill an issue.

This is where you can help. A brief article, which could be an equipment review, or an operating report, or anything with an amateur radio flavor, would be *most* appreciated.

The easiest way to contribute (for me) is to send it by modem if you can write it as an ASCII file on your computer. I hope to be on packet within the month, so a second way would be to upload it to one of our local PBBS stations. But don't let a lack of such means stop you! I will always take handwritten or typed articles or sketches if that's the way you would like to submit them. Don't worry about how I'll get it into O-Beat - that's my job. So give it a try. You too can gain fame and fortune as one of O-Beat's select published authors.

- Chris NXØE

MONTHLY CLUB MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held at the Hewlett Packard facility at the intersection of Union and Lexington Boulevards. Detailed directions may be obtained from any Board member. Please note that the meeting time is at 7:00 pm (1900 hrs). This month's meeting will be on 14 June 1989.

This month the program is tentatively scheduled to be about satellite tracking and orbital elements. In addition, Max KDØEL will discuss this year's Field Day effort.

"THE VIEW FROM THE PEAK"

"SPEECHLESS" MONITORS are increasing in the land of 2-meter repeaters. That's the conclusion one draws after a trip to the Pacific Northwest recently. As we drove along with the repeater directory at hand, many times a call was made asking for information - and met with no response.

It seems that the almost 100% response received to a call not too many years ago is in deep decline. While it's correct that a control station must monitor, no rule forces he or she to talk. Assuming they're monitoring, too often they're not talking when a transient is looking for some form of aid. Time changes everything; this is not a welcome change for ham radio...

Along this same line, I've noticed that most proponents of a new "no-code" class of license don't want the expected surge of newcomers on two-meters... Well, it may be that somewhere out there in La-La Land the band is overcrowded and can't handle any more users, but not from what I have been observing the past couple of cross-country trips. All those retirees of years ago that you could count on to be there on the repeater if help was needed have gone away in too many areas...

Remember good old "Georgetown Joe - W0DCY" who was on call for users of .94 for so many years until he became a "Silent Key"? We don't have an inexhaustible supply of "Joos" around...

THE "COLORADO CONNECTION" is on line and apparently well-monitored from what we observed on the trip out and back. What's the "Colorado Connection", you ask? Well, it's a linked system of repeaters covering thousands of miles of Colorado from the Front Range to Grand Junction and south into the San Juan Valley.

Parker is the home of the 145.355 repeater covering much of the Front Range; at Golden is the 145.400 repeater that fills in the Denver coverage to supplement Parker. At Leadville is the 145.445 system and near Salida is the 147.285 repeater; west of Glenwood Springs near Rifle is the solar-powered 146.985 repeater providing coverage west to Grand Junction and easterly towards Glenwood Canyon.

All of these repeaters are linked via UHF and normally run linked full-time; a user at Castle Rock into the

Parker system may not realize the station answering his call is mobile on I-70 approaching Grand Junction over on the West Slope and is coming through the Rifle system link!

To allow the system time-out timers to re-set properly, I was informed that users are asked to let the carrier of the repeater they are on drop-out completely after each transmission -- doing so will insure the entire system re-sets and keeps the users from talking but not being repeated.

One obvious advantage of using a linked system is the increased chance of getting a reply to a call if assistance is required. On the other hand, if you're looking for directions in Thornton, it may not be especially helpful to find the station you've raised is in Salida...

VERY PLEASANT INDEED during our recent trip to the Northwest was a brief chat with VE7GN - Kenneth McNaughton Rayner - just after driving the car off the British Columbia ferry at Nanaimo on Vancouver Island enroute Victoria. Ken is about 98 years of age, I understand; he was first licensed as C5GN long before World War I (1911). Next he became NC5GN and then VE7GN when call areas were changed. Still active on the air, he can tell in interesting detail of the early days of amateur radio in Canada; of wartime aircraft using spark gap transmitters and crystal detector receivers. We talked on the Chemainus (city on Vancouver Island) 146.66 repeater (remember, 20kHz spacing once you're in Utah and throughout the Pacific Northwest!).

TWENTY-SIX (26) LINKED REPEATERS! AND HALF OF THEM FULL-DUPLEX! Yes, it's true -- and I'll tell you more about this super-system next month. 73

-N8CIX



Product Review: SuperScaf Audio Filter

There are several places in a receiver where selectivity may be engineered in. This is fine if you are designing or building a new receiver. But what can you do to improve the selectivity of your old receiver? The easiest way to achieve extra selectivity in an older receiver is with an external audio filter. There are several different brands and types of audio filters on the market.

Most of the older types use various types of op amps and resistor-capacitor networks. These filters work reasonably well, but they exhibit "ringing" when used to attain very narrow selectivity for cw signals.

Newer generation audio filters use IC's with switched capacitor techniques. Don't ask for a technical explanation, I don't really understand how they work. But they do not have a "ringing" problem when copying cw signals.

The SuperScaf audio filter is manufactured by AFtronics in Longwood, Florida. The filter is available as a kit or as an assembled unit. The kit is well designed and the assembly manual approach is Heathkit quality. Kit assembly is estimated at 4 to 6 hours.

The SuperScaf is a switched capacitor filter. It is capable of selectivity of 40Hz for cw signals. It is simple to connect to your receiver. Operation is straightforward. There are four thumbwheel switches on the front panel. The first two set the high-pass cutoff frequency and the last two set the low-pass cutoff. By varying combinations of the thumbwheel switches, the audio passband may be tailored for almost any situation. A good description of switched capacitor audio filters may be found in the article "SuperScaf and Son, A Pair of Switched Capacitor Filters" which appeared in the April 1986 issue of QST by Rich Arndt and Joe Fikes.

I have used several audio filters over the years. The SuperScaf works quite well. It provides more selectivity than the internal filter in my Yaesu 757GX.

Because of the extremely sharp selectivity possible with the SuperScaf, tuning of the receiver can be critical. It is best to start with a wide passband and then narrow down once the desired signal is tuned in. The receiver also must be stable or the selected signal can drift out of the passband of the audio filter. Tuning is less critical for SSB signals. The SuperScaf attenuates the annoying high frequency hiss and "monkey-chatter" of adjacent channel signals when copying SSB. One feature that is not provided with the SuperScaf is a notch filter. A good notch filter can take out heterodynes and steady carriers that frequent the 40 meter phone band. The SuperScaf has plenty of output to drive a speaker and

there is a jack on the front panel for earphones. The audio quality is better than most of the other filters I have used. On a 1 to 10 scale, I rate the SuperScaf a 9.

73's -

Jim Sorrells WA9ABB

From Gateway: The ARRL Packet Radio Newsletter - Stan Horzepa, WAILOU, Editor

TAPR UNVEILS packetRADIO AT DAYTON

THE MISSING LINK

Something has been missing from packet radio... a radio designed specifically for the average amateur. Why 9600 bit/s? Most VHF amateur packet-radio operations use 1200-baud modems with radios designed for voice use. With few frequencies available for packet-radio use, today's channels are becoming extremely crowded. Packet radio is almost unusable in some metropolitan areas during evening hours. Sending data faster allows more users to operate on a given channel. And 9600-baud packets can be easily encoded using FSK techniques and fit within a normal 2-meter FM channel.

But, a faster modem running with a voice radio is a compromise at best. Why a Special Radio for Packet Radio? The typical VHF packet-radio station uses an FM transceiver designed for voice use. There are four major drawbacks to using such radios.

1) Timing. Voice radios have receive-to-transmit and transmit-to-receive turnaround times of about 150 to 400 ms. This dramatically reduces the amount of data that can be sent and increases the chance that two or more stations will interfere with one another. At 9600 bauds, a radio that switches in 1 ms can transfer files about 20% faster than one which switches in 200 ms. Similarly, a channel can accommodate four times as many users if the radios switch in 1 ms instead of 200 ms. At data rates faster than 9600 bauds, the differences are even more dramatic.

2) Interfacing. The modem-to-radio interface depends on audio response, filters and audio levels intended for microphones and speakers. More often than not, this leads to incorrect deviation of the transmitted signal, noise and hum on the audio, and so forth. Splatter filters and deviation limiters distort frequency response and further reduce the performance of the packet-radio system. Higher-speed operation (such as 9600 bit/s) involves surgery on the radio--there is no proper interface. The TAPR packetRADIO has built-in 1200-baud and 9600-baud modems. It plugs directly into a standard TAPR TNC modem disconnect. Its filters are optimized for data operation, not voice.

3) Complexity. The typical VHF radio manufactured today is competing in the voice market and includes many additional features which are simply not necessary in a data radio. These include telephone tone pads, scanners, digital readouts, squelch, voice synthesizers and miniaturization. In fact, these additional features often detract from the performance of the radio in data applications.

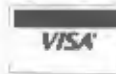
4) Price. The usual VHF FM transceiver sells for \$400 or more in today's market. A dedicated digital transceiver can be made to significantly outperform existing voice-grade radios for data use and at a substantially lower price. It makes good economic sense to free up a multifeatured radio for voice operation and use a simple, inexpensive data radio for digital applications. TAPR's packetRADIO has the following features that are designed for experimentation.

- o Design is easily adaptable for higher frequencies.
- o Each major subsection of the radio is on a separate printed circuit board for optimum performance. This results in the ability to upgrade to other frequency bands.
- o The modems are modular. Higher-speed operation to 56 kbauds and beyond is possible.
- o The basic RP deck may be used for modem experimentation.
- o May be used with a transverter for higher frequencies and higher baud rates.

The packetRADIO also provides the following features for optimum performance.

- o PIN diode antenna switch.
- o 25-watt RF output. o 5 crystal-controlled channels.
- o 1200-baud AFSK FM operation for communicating with existing stations.
- o 9600-baud FSK operation for performance (optionally capable of 19.6-kbit/s operation).
- o Operates in the 144-146 MHz band (optionally 220-225 MHz). Higher frequencies will be available as low-cost components enter the market.
- o Plugs into standard TAPR modem disconnect.
- o Capable of full-duplex operation with optional second local oscillator board.
- o Switches between transmit and receive modes in less than 1 ms.

An optional enhanced TNC 2 with ports and commands to control radio functions is also available. The rear panel of the radio proudly displays the American flag and the words "Born in the USA." from Tucson Amateur Packet Radio.



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DAYTON PACKET-RADIO FORUM EMPHASIZES THE FUTURE

The packet-radio forum at the Dayton HamVention looked to the future of the mode as presented by a number of speakers who kept a full house of listeners riveted to their seats for the entire Friday afternoon session.

The forum was organized and moderated by Bob Nebert, K9BL and featured the following speakers: Lyle Johnson, WA7GXD, who spoke about the various modems used in packet radio today, Bob McGwier, W4HY, who described digital signal processing (DSP) experiments that are being used to develop improved HF packet-radio modems, and Tom Clark, W3IWI, who gave a presentation on the Microsat Amateur Radio satellites, which will be launched on or after October 24. **Bdale Garbo**, N3EUA, described the experiments he has attempted with high-speed data communications on or above 18 GHz at 10 Mbits/s. The RF equipment required costs approximately \$100, but a lot of experimentation is still required before "Ethernet on the air" is a reality. People willing to join in these experiments are urged to send an SASE to

(continued on p. 9)

View From Dayton

From the First Time Visitor's Perspective

It is often said in many ham radio circles that at least once in your life that you should visit the Dayton Hamvention and participate in some of its many activities. Well, this was my first time to be a part of the Dayton Hamvention and I can certainly attest that it will not be my last.

The first part of the experience was getting there itself. Most hams usually drive to Dayton and I can attest that this year I was fortunate enough to have as my co-pilot and navigator Rick WB7THT. Having 2 meters and 70 cms in the car made it a real pleasure as well. You can feel the energy in many peoples voices as you talk to other amateurs all going to the same place for the very same reason. These people came from all walks of life and most had been saving their money for what gem they might find that they could not do without. One of the people that we came across was one of the managers of Missouri Radio.

We arrived on Thursday afternoon and all we had to do was await the arrival of Jim (WA9ABB), Bill WB2EVR, and Phil (VE1ARC) from Ontario. Being a little early we decided to visit the Air Force Aircraft Museum at Wright Patterson Air Force Base (this is a must see if you have the time). One could certainly determine that there were many hams in attendance by the number of HT's being listened to while touring the Museum. Everyone was listening to the talk-in frequency on 146.940 and from what we could determine by listening throughout the weekend, the repeater did not seem to get any rest at all. We even listened once at 2 in the morning and it was still going strong. Some exotic calls that we heard on talk-in was DL, G, VU, HC, XE and many others.

Despite what was told to me by others who have visited Dayton before, I was certainly not prepared for what I saw when I arrived there early Friday morning. We were fortunate enough to have some Flea Market spaces and that ensured that we did not have far to travel when visiting the different buildings and the flea market itself. I was overwhelmed by the number of antennas and radio equipment and the number of out of state plates. There was so much RF that trying to use 2 meter was out of the question. Most people in attendance were using either 440 Mhz or 220 Mhz and in at least one case, one crew from Florida set up their own 440 repeater!

The flea market itself was huge. From what I could see, there was at least something for everyone. There was everything there from ancient computer core memory to high tech repeater controllers. One of the things that was told to me by Jim WA9ABB was that if you could

not find it at Dayton then it was no longer being produced, it was extinct, or it had not been invented. Well, our crew was not be disappointed, as Phil VE1ARC was looking for some Hustler mobile antennas/traps. We had written it off as no longer being available when that last minute look into some junk chest revealed exactly what he was looking for. Jim, your comments are still intact and ready for challenge at next years hamvention.

Next was the commercial vendors and exhibits. Judging from Jim's and Rick's comments, this year they had expanded by about two or three times. Just about every manufacturer and dealer of ham radio equipment was in attendance. Icom was demonstrating a new VHF receiver that was much like the ICOM 781 in design and appearance. TAPR was introducing its new pocket transceiver and 9600 baud capabilities. Some entrepreneur wanted to be very competitive and had some scantily clad YL's promoting the companies products. All told, I believe that Rick, Jim and Phil made about 20 stops at this booth to pick up brochures!!

I think that I can safely say that about one-third to one-half of the inside space was dedicated to computer products. Business was brisk for these dealers and they carried just about anything under the sun that could be used in or attached to a computer. Prices were very competitive and were being dropped as the hamvention got on in days. Software writers were there demonstrating new types of logging programs that could be used for contests and normal operations to antenna design packages. Needless to say, I profited on the opportunity and acquired many new items.

So far, I have talked about what could be purchased or traded. There were many activities to be attended if one wanted as well. Several groups such as QCWA and VHF/UHF enthusiasts had their own get-togethers as well. In addition, there were formal dinners that one could attend as well.

Our group (Jim, Rick, Phil, Bill and myself) attended a banquet put on by the Dayton Hamvention group. It was an excellent catered dinner (who can complain with steak) and it was at this event that several pioneers, technical experts and systems designers were recognized for their outstanding contributions to amateur radio. On the humorous side, one of the speakers was the Mayor of Dayton and he could not tell everyone how pleased he was to have the Hamvention in Dayton as Hams were bringing lots of money into his city (now how is that for honesty). I was particularly pleased that I won an UHF ICOM IC-04AT HT (Jim says that I did not want to go as well). And if that was not enough to fill your social calendar, several of the Ham Radio groups had set up their own

hospitality suites that were well attended during the weeks festivities.

When it comes to ham radio and the Dayton Hamvention, not even the weather can dampen the spirit of the event. While Phil, Rick, and myself had to overcome some torrential downpours and drying ourselves out in the cars, Bill and Jim to contend with the after-effects of wet clothes. Jim claims that it was the first time that he was mooned at Dayton!!

Well there is so much that can be done after going to Dayton for the first time. In my case, I was saturated come early Sunday and could not bear the thought of going back to participate on Sunday as well - besides my money was all spent!! Well there is always next year...

What else can I say?? It was a great experience that is worth repeating for the second and many other times. Maybe I will see you there next year when I will travel down with Phil VE1ARC from Kingston, Ontario. 73 -

Keith NY0T / VE3PDD



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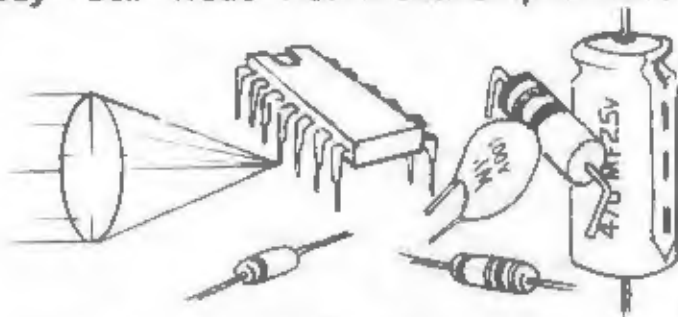
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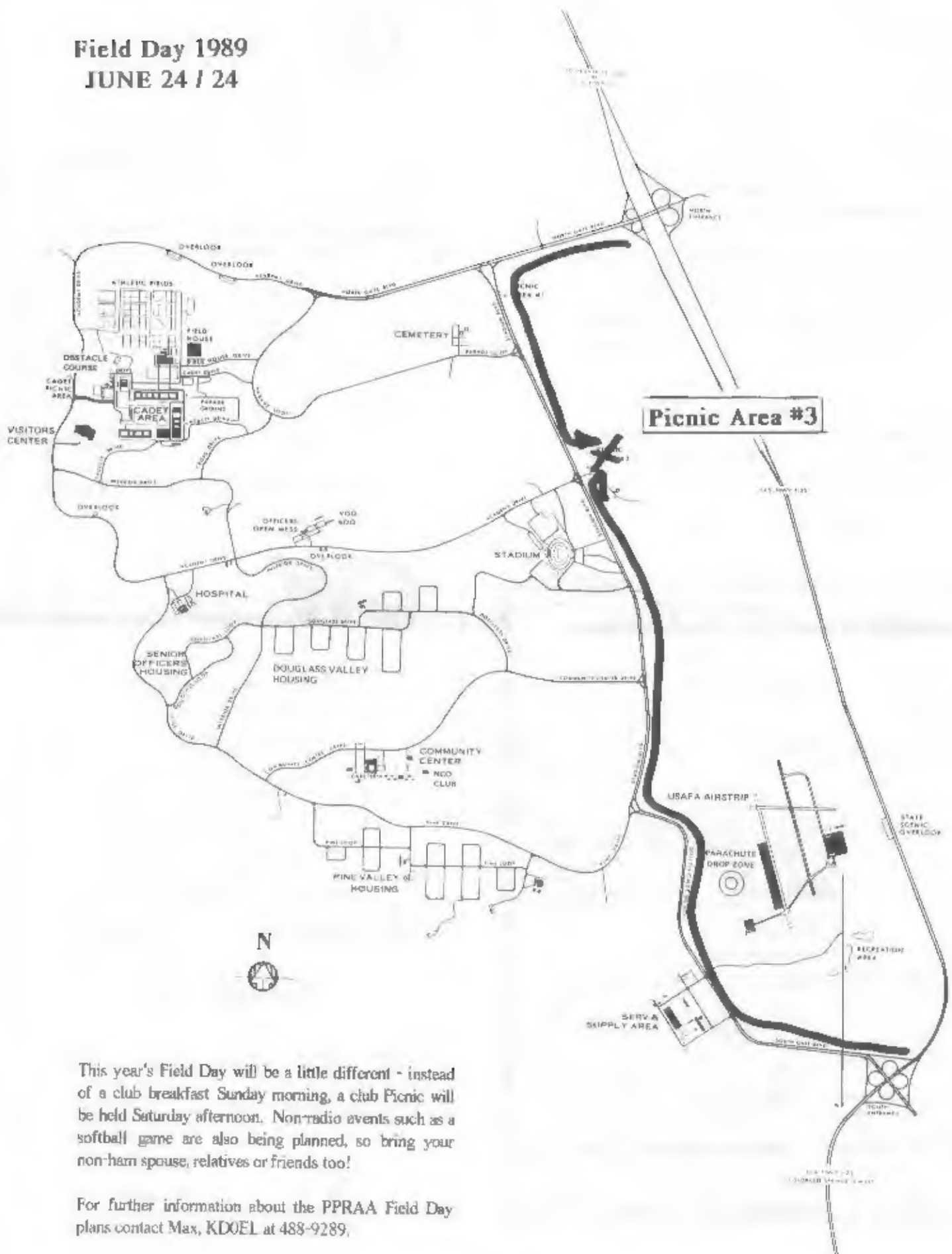
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Field Day 1989 JUNE 24 / 24



This year's Field Day will be a little different - instead of a club breakfast Sunday morning, a club Picnic will be held Saturday afternoon. Non-radio events such as a softball game are also being planned, so bring your non-ham spouse, relatives or friends too!

For further information about the PPRAA Field Day plans contact Max, KDOEL at 488-9289.

Bdale to obtain schematics and notes concerning the project. Pete Eaton, WB9FLW, introduced TAPR's packetRADIO to the members of the forum. Greg Jones, WD5IVD, made a short presentation on the state of TexNet by describing the active TexNet systems in Texas, Oklahoma and on 6 meters in Michigan. David Toth, VE3GYQ, presented his views on the "rational use of HF PBBS network" and emphasized the use of "priority ACK" to improve the network. Phil Kam, KA9Q, winner of the 1989 Dayton Amateur Radio Association Special Achievement Award, described the works in progress for his TCP/IP code. They include a multitasking kernel, Berkeley UNIX sockets for Internet and AX.25, high-speed HDLC drivers, autorouting and intelligent host interfaces. To close out the forum Chuck Gelm, NC8Q, and Comer Dacres, W8MDK, described the use of packet radio for public service operations including a Red Cross air evacuation drill in Cincinnati and a NOAA-Amateur Radio weather network.

DITS AND BITS

O-Bent will allow amateurs to place free non-commercial want-ads of interest to local amateurs on a space available basis. O-Bent will attempt to insure accuracy in printing ads but cannot guarantee it.

FOR SALE:

One section of Rohn 25 tower, guy cable, two screw in anchors, several guy wire turnbuckles. Call Ben, WBOGCN at 577-4766.

FOR SALE:

Narda model 8250 microwave oven leakage tester for 2450 MHz. Paid \$175 - will take best offer. Contact K8DQC at 630 - 3733.

HAM FEST!

The Western Colorado Amateur Radio Club is sponsoring a ham fest on Saturday, July 1. It will be held at the Colorado National Guard Armory in Grand Junction from 8:00 until 3:00 PM. At 1:00 PM there will be VEC testing with walk-ins welcome. For more information contact Randy Martens at (303) 242-4205. There will be talk-in on 146.34 / 94.

FIELD DAY FIXUP PLANNED:

Max Stafford, KD0EL, coordinator of the PPRAA Field Day effort this year, has planned a fixup day for the club equipment for Saturday, June 17th. The time is tentatively planned to be 9:30, at Max's house in Palmer Lake. The club beam will need some repair, and the mast needs maintenance. New ground stakes and new ropes are also needed. Please attend if you can, and bring along some tools if they're handy.

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MINUTES OF MAY GENERAL MEETING

submitted by AJ N0CMTW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held at the Hewlett-Packard Briargate Facility, May 10, 1989. The meeting was called to order by the vice president Rick WB7THT at 19:00, and followed by the introduction of members and guests.

The minutes of the previous General Meeting and Board meeting were approved as printed in O-Beat.

Committee Reports

Note: Anyone wishing to help out on any of these committees, please contact the chairman at the phone number listed. Thank you for your support.

Treasurer - Ron NK0P (593-8352):

Previous balance was \$1257.94 and the new balance is \$1186.22.

Interference - Ron NK0P (593-8352):

Nothing to report.

Education -

NOTE: We will need an education chairman if we are to keep our status as a Special Service Club. Contact any Board member if you can serve.

Publicity - Karen N1FED (495-0091):

Karen passed around a signup sheet for an official PPRAA coffee mug. Contact her if you want one.

Colorado Council of Amateur Radio Clubs (CCARC) - Oak K0ROL (635-2289):

Nothing new to report.

Deaf and Blind School - Jim WA9ABD (598-7543):

Jim will be leaving this July and a replacement will be needed to take his position as well.

O-Beat - Chris NX0E (495-0624):

Chris was not present but will need the support of the club. *(Ed note: I can always use more locally produced articles. Let's keep O-Beat a PPRAA publication, and not a rehash of nationally distributed material.)*

ARES - Cliff KB0CVW (597-7334):

Meets every Wednesday night on the 37197 repeater (WOYNE) at 1830 hrs local.

Public Service - Mike K0TER (636-1290):

Mike spoke of several upcoming events that the PPRAA has been asked to support. Help is needed with the Walk America on May 21 and the Endura on June 25. The need for help with the Endura is urgent. On July 8 and 9 help will be needed with a bike ride from Denver south. Please contact Mike if you would like to participate.

VE Testing - Max KD0EL (488-9289):

Next test will be May 13 at Chapman College, at the corner of Flintridge and Academy. Max expressed the importance of pre-registering early and needs VE help.

SWAPFEST - Rick WB7THT (599-7665):

All is proceeding well and help is needed setting up tables the Friday night before the swapfest.



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Old Business

Frank NOFS has set up novice classes for June 12 - 30 from 3 to 5. He will need some assistance with them.

We need a new education chairman.

New Business

Malcom KE9S is planning a balloon launch carrying packet equipment and needs help. Contact him at 488-2071.

Max, KD0EL, announced a meeting planned for May 11 about the Palmer Lake antenna ordinance.

Fred, KA0WIE, would like all using his packet BBS to put the destination into the subject area of messages, if you want it to get there!

Prizes:

After a short break the prize drawing was held. Winners were:

Irene, Ah6GF - floppy disk holder

Andy Dodd - coax

Rosie, WA0MNL - flex lamp

Doug, N0HJT - tie wraps

Rene, KA0ROY - coax seal

Program:

The program this month was on 10 GHz high speed packet. Bdale, N3EUA gave an enlightening talk on his development of (soon to be) 10Mb/s TNCs, and described an opportunity to become a beta tester of the new TAPR 9600 baud radio.

The meeting was adjourned at 2130. The next meeting will be 14 June 89.

MINUTES OF THE MAY BOARD MEETING

submitted by AI N0CMW

The Board meeting was held on 15 May 89 at the QTH of Doug N0HJT. In attendance were Ron NK0P, Keith NY0T, AI N0CMW, Bud N0DDF, Doug N0HJT, and Rick WB7THT, Bdale N3EUA, and Karen, N1FED.

A discussion was held about programs at club meetings. The June program will include a presentation on satellite tracking and orbital elements, as well as field Day. It was decided to give guest speakers certificates of appreciation.

In addition, two deserving club members will receive certificates for their exceptional dedication to Amateur Radio. This year they are awarded to Mike, K0TER for his work with public service and Jim, WA9ABB for his work with the Deaf and Blind School students.

Karen was authorized to spend up to \$150 for materials for this project.

The next board meeting will be held at the N1FED / N3EUA residence.

AEA RADIO CLUB MINUTES

The AEA Radio Club meeting was held 9 May 89 at 1130 hrs at the rec center lunch area. Present were Faylene KB5FTN, Jim WA9ABB and AI N0CMW, with most other members TDY. The treasurer reported a balance of \$42.00. There being no further business, the meeting was adjourned.

The next meeting is scheduled for June 13, at the same location.

Respectfully submitted by AI N0CMW.

SWAPFEST 1989

May 20, 1989 saw yet another profitable SWAPFEST for our club. Although all the accounts receivable have not come in as of this date I can give a good estimate of the proceeds.

We rented 115 table at an average of \$6.96 each. The cost of rental was \$410.03 for a \$390.97 profit on table sales. We sold 1611 tickets for the grand prize at \$1.00 each. Cost of all prizes plus printing fees and license fees were \$1,002.21. This leaves us with \$903.76. We still have \$96.00 due in and a 3% fee to send to the State of Colorado. We should have between \$900 and \$1,000 after all bills are paid.

The club checkbook balance as of June 1, 1989 is \$2,463.37.

Submitted by NK0P, Treasurer PPRAA

MILEY'S RADIO

Jess KØTAA 719 W. 7th St. Florence, Colorado 81226 (719) 784-3040
Hours 9 to 6 Tuesday through Friday — Saturdays 9 to 1 — Evening Hours 7:30 to 10 Tues., Wed., Thurs. (Call Ahead)
Closed Saturday 1 PM, Sunday & Monday
Closed for out-of-state Hamfests, July 7-24.

Hamfest Schedule:

6/10	Loveland, CO
7/1	Grand Junction, CO
7/8, 9	Cheyenne, WY
7/15, 16	East Glacier, MT
7/22, 23	Woodland Park, CO
7/30	RMRL — Jeffco Fairgrounds, Denver — postponed until later in Fall
8/12, 13	Amarillo, TX
8/27	Gateway parking lot???
9/2, 3	Alamogordo, NM
9/10	Camp-Out Laramie, WY
9/15, 16	Wichita Falls, TX
9/30	Santa Fe, NM
10/8	Lubbock, TX
11/4, 5	Odessa, TX
12/2, 3	Apache Junction, AZ

Hamfest season is in full swing and the equipment inventory changes weekly.

We have lots of good used HF and VHF gear in stock.

Call for the rig you want.

73's — Jess

5/89

Membership Application

PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

P.O. Box 16521

Colorado Springs, CO 80935

Date _____

Name _____

Address _____

City _____ State _____ Zip _____

Call _____ License Class _____

Are You An ARRL Member? ☐ Yes ☐ No Telephone _____

☐ Full Member \$12.00 ☐ Family Membership \$15.00 ☐ Newsletter Only \$6.00

☐ Age 65 or older, or under 18 \$8.00

Additional Names _____ Call _____ Class _____

Associate Member \$8.00 ☐ (Outside Teller & El Paso Counties.)

PPRAA is not associated with the Pikes Peak FM Association.